

Paolo Jorio  
Roberto Prato  
Luigi Boggio  
Rinaldo Plebani  
Corrado Modugno  
Simone Bongiovanni  
Luigi Franzolin  
Elena Cerbaro  
M. Cristina Baldini  
Giancarlo Revelli  
Mauro Eccetto  
Raffaele Borrelli  
Fabio D'Angelo  
Mirko Bergadano  
Matteo Bellemo  
Matteo Maccagnan  
Daniele Cernuzzi  
Stefano Manconi Dirrigl  
Raffaella Barbuto  
Lino Bonon  
Francesco Fabio  
Robert Scotti (US IP Att.)  
Satsuki Takasaka

Andrea Bernotti  
Paolo Lovino  
Francesco Fiussello  
Cesare Bosman  
Stefania Berta  
Bruno Zampugno  
Simone Mangini  
Edoardo Mola  
Lorenzo Nannucci  
Manuela Giannini  
Cristina Rolando  
Andrea Fiorini  
Michele Di Sciava  
Lidia Casciano  
Alessandro Putzolu  
Giovanni Lo Cigno  
Gerardo Valeriano

**Legal Advisers:**  
Claudio Costa  
Maria Teresa Saguatti  
Chiara Luzzato  
Alberto Improda  
Raffaella Arista



**STUDIO TORTA** U 016096-5  
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JORIO, PRATO, BOGGIO & Partners

Via Viotti, 9 - 10121 Torino - Italy  
Tel. +39-011.561.13.20; Fax +39-011.562.21.02  
Videoconference +39-011.518.42.48 (6 ISDN channels H.320)  
E-mail: info@studiotorta.it Internet: www.studiotorta.com

Industrial Property Consultants - Established in 1879  
European and Italian Patent Attorneys  
European and Italian Trade Mark and Design Attorneys  
TURIN MILAN BOLOGNA VERONA TREVISO RIMINI ROME

**To the International Bureau,  
WIPO  
34, chemin des Colombettes  
1211 Geneva 20  
Svizzera**

Torino, December 03, 2004

**BY FAX (9 pages)**

**CONFIRMATION BY DHL**

**Our Case.: E-2261/04 EM**

Dear Sirs,

**RE: International Application No. PCT/IB2004/002219  
Applicant: ERRIU Fernando  
Amendments under Article 19**

Please find enclosed herewith a new set of claims and the statement under Article 19(1).

New claims 1 to 15 replace claims 1 to 17 as originally filed.

Please find also enclosed herewith a copy of the signed Power of Attorney form.

Yours faithfully,

  
Luigi FRANZOLIN

10121 Torino Via Viotti, 9 Tel. +39-011.561.13.20 Fax. +39-011.562.21.02	20123 Milano Corso Magenta, 56 Tel. +39-02.48.01.42.16 Fax +39-02.48.01.50.82	40133 Bologna Via Emilia Ponente, 34 Tel. +39-051.38.91.22 Fax +39-051.38.90.30	37062 Dossobuono (VR) Via Vertua, 2 Tel. +39-045.860.08.53 Fax +39-045.861.80.80	31100 Treviso Viale Appiani, 26 Tel. +39-0422.22.199 Fax +39-0422.23.316	00187 Roma Via Due Macelli, 47 Tel. +39-06.67.91.589 Fax +39-06.67.97.747
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EXPRESS MAIL LABEL  
NO.: EV 480 462 844 US  
Studio Torta S.r.l. - cap.soc. € 100.000 - Trib. Torino 4108/93 - C.C.I.A.A. Torino 799226 - Int. V.A.T. Code IT06589950010

PCT APPLICATION NO. PCT/IB2004/002219 in the name of  
Fernando ERRIU

C l a i m s

1. A fluid device (1; 20; 40; 50; 60; 70; 80; 90;  
5 90'; 90'') for recovery of the kinetic energy of  
vehicles, comprising an intake pipe (13), a delivery  
pipe (15), and a pumping unit (7; 22), which is  
connected to said intake pipe (13) and to said  
delivery pipe (15) for sending fluid under pressure  
10 from said intake pipe (13) to said delivery pipe  
(15), at least one actuating element (5; 22; 44; 52;  
62; 76; 108), which is set along a road or railway  
course (3; 75) of a road or railway infrastructure  
(3a; 71) for land vehicles, is connected to said  
15 pumping unit (7; 22) and can move between a position  
of unloading and a position of loading, in which said  
at least one actuating element (5; 22; 44; 52; 62;  
76; 108) is adapted to be surmounted by a vehicle  
travelling along said road or railroad course (3;  
20 75), said device being characterized in that said  
actuating element (22; 76; 108) is elastically  
deformable and has a contact surface (26) in contact  
with said vehicles and substantially aligned to said  
road or railroad course (3; 75).
- 25 2. The device according to Claim 1, characterized in  
that said surface of contact (26) is substantially  
plane, and in that said actuating element (22; 76;  
108) comprises end portions (27) longitudinally set  
opposite to one another and rigidly connected to said  
30 road or railroad course (3; 75).
3. The device according to Claim 2, characterized in

that said actuating element (22) comprises a membrane, and defines, at the top, a first variable-volume chamber (23) connected to said intake line (13) and said delivery line (15).

5 4. The device according to Claim 3, characterized in that it comprises a honeycomb structure (103) for pumping connected to said intake line (13) and said delivery line (15), which defines a multiplicity of second variable-volume chambers (109) delimited, at  
10 the bottom, by a supporting wall (100, 110) and co-operating, at the top, with said actuating element (22).

15 5. The device according to Claims 3 and 4, characterized in that said honeycomb structure (103) is set inside said first chamber (23), and in that each of said second variable-volume chambers (109) is delimited by rigid side walls (107), which come out of said supporting wall (100) and, at the top, from a deformable head membrane (108) connected in a fluid-tight way to said side walls (107) and co-operating  
20 with said actuating element (22).

25 6. The device according to Claim 5, characterized in that said second variable-volume chambers (109) are delimited at the sides by a multiplicity of rigid separating walls (111), which are hinged to said actuation element (22) and to the supporting wall (110).

30 7. The device according to any one of the preceding claims, characterized in that said device is supported, at the bottom, by a base (101), which has a plurality of intake tanks or chambers (102) that

are fluid-connected to one another by said intake line (13).

8. The device according to any one of the preceding claims, characterized in that it comprises an elastic  
5 element (24; 73), which co-operates with said actuating element (22; 76) and is designed to re-establish said unloading position.

9. The device according to any one of Claims 1 to 8, characterized in that said road infrastructure (3a)  
10 is a street.

9. The device according to any one of claims 3 to 8, characterized in that said road infrastructure (71) is a railroad line comprising sleepers (74), in that said road course (75) comprises tracks, in that said  
15 actuating element (76) comprises rails and in that said membrane (22) functionally cooperates with said rails.

10. The device according to any one of Claims 1 or 2, characterized in that said road infrastructure (71)  
20 is a railroad, comprising a bed (73) and a multiplicity of sleepers (74) supported by said bed (73), in that said actuating element (76) comprises rails connected to said sleepers (74) and in that said pumping unit (7) is functionally connected to at  
25 least one of said sleepers (74).

11. The device according to Claim 10, characterized in that it comprises an oscillating actuating member (62) connected to one of said sleepers (74) and said pumping unit (7).

30 12. The device according to any one of the preceding

claims, characterized in that it comprises a unit for generation of electric power (17, 18) connected to said delivery line (15).

13. The device according to any one of the preceding  
5 claims, characterized in that said fluid is hydraulic.

14. The device according to any one of the preceding claims, characterized in that said fluid follows a closed circuit (150).

10 15. The device according to any one of the preceding claims, characterized in that it comprises rigid elements (105, 107a) disposed below said actuating element (5; 22; 44; 52; 62; 76; 108) and supporting said actuating element (5; 22; 44; 52; 62; 76; 108)  
15 in said loading position.

PCT APPLICATION NO. PCT/IB2004/002219 in the  
name of Fernando ERRIU

STATEMENT UNDER ARTICLE 19(1)

5 The Examiner's remarks have been duly taken into  
consideration and it is believed that the invention  
as now claimed is both novel and inventive over the  
cited prior art.

New claim 1 has been drafted as a combination of  
10 original claims 1, 2 and 4. Neither of the cited  
documents discloses or suggests a fluid device for  
recovery of kinetic energy as claimed.

The closest prior art fluid device, considered  
to be the one disclosed in US4212598, comprises a  
15 resilient tube 18 housed inside a recess 14 placed  
transversally on a street and a rigid treadle 28  
hinged on one lateral side of recesses 14 and  
covering tube 18 being inclined with respect to a  
surface 12 of the street. The known device further  
20 comprises a flap-like bearing member 24 narrower than  
treadle 28 and hinged to the street surface 12 on a  
lateral side of recess 14 opposite to mobile treadle  
28.

During operation, the known device is repeatedly

impacted by travelling vehicles and is pressed on an abutment surface that is connected with the external ambient and may collect small banks of debris causing an irregular contact and a distortion of the rigid  
5 treadle 28.

Therefore a continuous monitoring of treadle 28 is required because a permanent deformation or an unpredicted breaking of treadle 28 would compromise stability and safety of travelling vehicles.

10 The use of an elastically deformable actuating member in direct contact with the tyres of the travelling vehicles allows a proper sealing against debris, thus enhancing the reliability of the device.

Furthermore, the elastically deformable  
15 actuating member is substantially aligned with the street course, which lowers the impact loads on the device and allows an efficient operation regardless the direction of motion of the travelling vehicles.

The device as claimed can be also used in  
20 railways whose bed and rails are inherently resilient and may be used to actuate a pumping unit. In this case, a railway can be equipped with reduced costs and the reliability of the device is compatible with the safety requirements needed in a railway. In fact

there is no need for a supplementary actuating element in contact with the wheels of a travelling train, and the already existing rails and bed are used without any significant structural modification.